Charlotte Mason's House of Education,
Scale How, Ambleside, UK, 2009

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NOTES OF LESSONS.

[We have thought that it might be of use to our readers (in their own families) to publish from month to month during the current year, Notes of Lessons prepared by students of the House of Education for the pupils of the Practising School. We should like to say, however, that such a Lesson is never given as a *tour de force*, but is always an illustration or an expansion of some part of the children's regular studies (in the *Parents' Review* School), some passage in one or other of their school books.—Ed.]

I.

Subject: Introduction to the Second Book of Euclid.

Group: Mathematics. Class IV. Age: 16½. Time: 30 minutes.

By Ida E. Fischer.

Objects.

I. To cultivate the power of inductive reasoning.

II. To give a first introduction to the second book of Euclid, showing its close connection with part of the first book.

III. To teach the first proposition of Book II.

Lesson.

Step I.—Begin by noticing that there is more than one way of proving that figures are equal in area. When they are similar as well as equal the equality may be proved by superposition as in I. 4. This the pupils know and tell themselves. But this cannot be done when we have a parallelogram and a triangle to compare, or two dissimilar triangles or quadrilaterals, for example in Propositions 41 and 43 of Book I. We notice that Book II. consists almost entirely of comparing quadrilaterals and might be taken in connection with parts of Book I.

Step II.—Before beginning the proposition show the pupils why rectangles are said to be contained by any two of their conterminous sides. Thus A B C D is said to be contained by A B and B C and it is written A B · B C. The point really being = ×. Thus, if A B = 3 and B C = 2, A B · B C = 6.

The area of A B C D is really its length multiplied by its breadth, that is A B multiplied by B C. All this the pupils can give themselves as well as the meaning and derivation of conterminous.

Step III.—Begin with the particular enunciation of Proposition 1, Book II.

Particular Enunciation. Let A B and C D be two given straight lines, let C D be divided into any number of segments, C E, E F, F D.

It is required to prove A B · C D = A B · C E + A B · E F + A B · F D.

Construction. From C draw C G ⊥ to C D and = A B. (I. ii. 3.)
Through G draw G H ∥ to C D,
and through E F and D draw E K, F L, D H ∥ to C G. (I. 31.)

Proof. Then C H = C K + E L + F H. (I. ax. 8.)
That is G C · C D = G C · C E + K E · E F + L F · F D.
But G C, K E, L F are each = A B. (Constr. I. 34.)
∴ A B · C D = A B · C E + A B · E F + A B.

Let the girls do as much of the work as possible without help, such as constructing the figure and giving the proof.

Step IV.—Let the girls write out the proof, having the figure on the board, and from the proof let them give the general enunciation:—"If there be two straight lines, one of which is divided into any number of parts, the rectangle contained by the two straight lines is equal to the rectangle contained by the undivided line and the several parts of the divided line." Do not have the long enunciation learnt by heart.

Step V.—Recapitulate.

II.

Subject: Spiders.

Group: Natural Science. Class I b. Age: 9. Time: 20 minutes.

By D. Smyth.

Objects.

I. To teach the children something about the common garden spider, and so give them an added interest in their walks out of doors.

II. To arouse a feeling of wonder and reverence for insect life.

III. To increase the powers of attention, observation and narration.

LESSON.

Step I.—Let the children look carefully at a spider, and ask them to describe its appearance and everything they notice about it.

Step II.—Make a diagram of the spider on the board enlarged, so that the children may get a clear idea of the shape and position of the spinnerets, breathing holes, eyes, fangs, etc., which would be difficult to see distinctly on the living spider, and point out these parts, giving the name for each, and telling them the use of each part.

Step III.—Now ask the children to think of the spiders' webs they have seen, and how wonderfully they are made. From what the children have already been told, they will know that the web comes out of her body through the spinnerets. Then draw a diagram of the five spinnerets with the threads coming out, and while drawing it explain that it does not come out of one hole, as might be expected, but that there are 100 holes in each spinneret. As there are five spinnerets the children will be able to tell you that there are 500 holes altogether. Out of each hole a line comes, and one thread of a spider's web is made up of 500 lines, as in the diagram.

Step IV.—Show how the spider begins her web, by means of a drawing on the board of a suitable place for a web; a branch of a tree and a post or bush; and explain how the spider begins her web, and all her proceedings, at the same time drawing in the web. She begins at (*a*) and goes on to (*b*), then from (*b*) to (*c*), and explain that these four lines take longer to construct than all the other part, and are the most irksome.

Step V.—Explain how the spider catches her prey. After finishing the web she carries a line *(f)* with her, which is attached to the middle of the web, and hides under some leaf. Directly an insect gets into the web she feels a pull and immediately darts out. The children will most likely be able to tell how she kills her prey, from the information

they have already had about her poison fangs. Tell them what the spider does when her prey is too strong to kill in this way; she weaves a covering of silk round him, till he can struggle no more.

Step VI.—Tell them that in the autumn the spider lays her eggs. She spins a cocoon scarcely half an inch across and lays in it from six to eight hundred eggs and then leaves it.

Step VII.—Summarize. Go over the points you wish them to remember.

Step VIII.—Recapitulation.

III.

Subject: Glacial Action.

Group: Science. Class III. Age: 13 and 14. Time: 40 minutes.

BY W. T. WILKINSON.

OBJECTS.

I. To help the pupils to trace cause from effect, and so develop their powers of reasoning.

II. To cultivate a taste for independent mental activity.

III. To give the pupils a further interest in their own district.

IV. To help the pupils to recognise from the evidences left behind that there were once great glaciers in England.

LESSON.

Step I.—Make sure that the pupils know what a glacier is and how it is formed. Let them tell where glaciers can now be seen, *i.e.*, in Switzerland, Norway, etc.

Step II.—Glaciated Rocks. Show the pupils a piece of glaciated rock found in the Lake district, and ask if they know what has made the striations upon it, and why the side with the striations is polished. Ask them for local examples of similar rocks where the striations are well marked, as on the rock in Ambleside Churchyard.

Step III.—Put these sketches on the board:—Ground before a glacier has passed over it, and ground after being smoothed by the action of a glacier; and let the pupils think

which way the glacier has passed, namely, from left to right, smoothing down the slopes on the side facing the glacier, and leaving the sheltered side almost unaffected, with débris in the hollow.

Compare the appearance of English glaciated rocks with those of Switzerland by showing a picture of the Grimsel.

Step IV.—Moraines. Show the pupils pictures of moraines that have been formed, as in Borrowdale; and of moraines now being formed, as on the "mer de glace," in Switzerland.

Draw from the pupils how those moraines have been formed, *i.e.*, by stones and rubbish falling on to the glacier, and either being banked up or thrown off at the sides, as in lateral moraines; or left where the glacier melts into streams, as in terminal moraines, or being carried along by the streams and spread over the land, as in morainic mounds or drift. Tell the pupils that this drift is a stiff clayey soil with boulders of rock in it, and is found as far south as the Thames Valley.

Step V.—Show the pupils the map of the Lake district, and, if they do not know, show them where some good examples of moraines and morainic mounds can be seen, as in the Grisedale. St. John's, Greenup and numerous other valleys, and in the Honister Pass.

Let the pupils find out from the lie of the moraines the direction and limits of the passage of some of the Lake district glaciers.

Step VI.—Erratics. Show the pupils some pictures of Erratics, and tell them what kind of stone they are, viz., at Wolverhampton is a large block of Scotch granite and blocks of andesite from the Lake district; at Birmingham there are large blocks of stone from the Arenig mountains in North Wales; at Flamborough Head there are blocks of Shap granite; and in Norfolk and Lincoln are blocks of stone only found in Scandinavia.

Get the pupils to say how these blocks got to their present destinations, so far from the parent rocks, and say why they could not have come by water or by icebergs—because they are not rounded or water worn, nor are they scattered indiscriminately, but follow a certain definite plan, *i.e.*, those found in Lancashire and Cheshire are always to the south-west of the place of origin.

Step VII.—Mention the names of some Arctic animals, *e.g.*, musk sheep, Arctic fox; and trees, as the Arctic willow and dwarf birch, the remains of which are found in England in the drift and river-glacial deposits.

Step VIII.—From these evidences let the pupils draw the conclusion that this country was once united to the Continent, and that the part of England north of the Thames was once covered with ice, as is Greenland in the present day.

Let the pupils show, on a map, the directions of the Scotch, Lake district and Scandinavian glaciers, and make a rough sketch of their directions on the board.

Step IX.—From their knowledge of the position of glaciated rocks and moraines, draw from the pupils the fact that the glacial formation lies next to the recent formation. Tell them that these two formations belong to what is called the Quaternary system, the most recent system of the four great series into which the formations of the earth are divided. Tell them that the Glacial Period is supposed to have begun about 200,000 years ago, and lasted about 150,000 years.

Step X.—Recapitulation.